ORD APPLICATIONS DEVELOPMENT AND MANAGEMENT SUPPORT

Performance Work Statement

INTRODUCTION

The ORD Applications Development and Management Support (ADaMS) PWS is designed to ensure the Environmental Protection Agency (EPA), Office of Research and Development (ORD) is provided software development ,testing, implementation, and production support for various ORD labs, centers, and offices for (1) science/research management systems / software and (2) administrative systems / software.

BACKGROUND

The Office of Science Information Management (OSIM) within ORD provides information technology and management support to the 14 geographic locations and all Lab/Center/Offices (LCOs). Within OSIM, the Application Support Division (ASD) supports both the administrative and scientific application community. Over the past 6 years, OSIM's ASD supported over 240 applications in an off-site, remote support model successfully transitioning from a previously on-site distributed support model. The off-site model provided cost savings and enterprise-wide vantage point for multiple, redundant applications. Alongside the general operations and maintenance support provided, ORD's ASD also developed and implemented several ORD-wide applications supporting all of ORD. As both the administrative processes were consolidated and re-engineered to provide ORD-wide services, the technology and systems to administer and support the services changed with it. In addition in 2013, EPA moved from Lotus Notes email and domino application platform to Microsoft Office 365 cloud offering. The Lotus Notes application environment is still present and supported, however the desire is to ultimately migrate away from it in the next few years. There are hundreds of Lotus Notes applications and databases that will need to be retired or migrated when the domino environment is no longer supported. The Agency is revisiting the application standards and a hybrid on-premise and cloud O365 Sharepoint environment is likely going to become an application platform standard, in addition to Oracle Apex, Java, and others.

PURPOSE AND SCOPE:

The tasks required under this PWS include most phases of the Systems Life Cycle Management Framework. Support for ADaMS shall adhere to the Agency's System Lifecycle Policy and software management best practices. Current systems within scope are provided in an attachment. NOT included in scope of this task order is ORD's Management Information System (OMIS) although interfacing with OMIS is a part of several of the applications supported that are in scope. Additional systems may be added to those already identified throughout the life of the task order.

Support includes project coordination with other ORD Operations Support Task Orders, other ORD software developers, application owners, and application developers under other task orders or contracts. The scope of this effort includes services necessary to provide a full range of application design, development, and maintenance support. Primarily, but not exclusively, services provided will focus on applications supporting ORD's administrative and science management business processes.

A key mission for the organization is the development and maintenance of research management and administrative applications. To accomplish these tasks necessitates in-depth knowledge and expertise in all areas of requirements elicitation, application design, documentation, implementation, maintenance, management to ensure that requirements are met and deliverable products comply with the Agency IT enterprise architecture, standards, and business needs.

To ensure that all agency application development, documentation and maintenance efforts deliver products that effectively meet approved requirements and established architectures, the services of an expert contractor are required.

Included in the Appendices is the application portfolio currently considered within scope of this task order. This portfolio will be living and may decrease and increase over the life of the task order. Also included is historical ticket counts for the operations and maintenance support previously provided. The tickets are classified by type and application. For the past six years, excluding the support previously provided to the OMIS application which is not in scope of this task order, average ticket counts were 100-200 per month across ORD sites. Common ticket types included: data fix, issue analysis/question, on-demand run requests, metrics/reporting, defect/fix/batch, user access, password resets, general support, system/environment maintenance, and security. Ticket types that will be considered within scope of the optional hours CLINS are enhancements/new development and estimation.

Expected benefits of these application design, development, implementation and maintenance support services to the Government include:

- Increased consistency and value of applications;
- Increased confidence in the products delivered;
- Reduced implementation costs;
- Improved user acceptance;
- Reduced operation and maintenance costs.

Task Order Management

1.1. Progress Reporting

The contractor shall provide progress reporting that monitors performance and finances associated with this task order. Progress reporting may be requested to be broken down by the Technical Directive Document (TDD), site, and Lab Center Office (L/C/O) level.

ORD reserves the right to provide the format and elements the Progress Report will include. At minimum, the following shall be included:

(a) The Contractor shall furnish three (3) copies of the combined monthly technical and financial progress report stating the progress made, including the percentage of the project completed, and a description of the work accomplished to support the cost. Include the estimated percentage of task completed during the reporting period. The contractor shall include the next month anticipated/planned activities in the current month progress report with a crosswalk between what was "planned next month activities" to "actual next month activities." The report shall be provided to the Contracting Officer (CO), the Task Order Contracting Officer Representative (TOCOR), and the Administrative Alternate Task Order Contracting Officer Representative (AATOCOR).

(b) Specific discussions shall include difficulties encountered and remedial action taken during the reporting period, and anticipated activity with a schedule of deliverables for the subsequent reporting period.

(c) The Contractor shall provide a list of outstanding actions awaiting Contracting Officer authorization.

(d) The report shall specify financial status at the task order level as follows:

(1) For the current reporting period, display the amount claimed.

(2) For the cumulative period and the cumulative task order life display: the amount obligated, amount originally invoiced, amount paid, amount suspended, amount disallowed, and remaining approved amount. The remaining approved amount is defined as the total obligated amount, less the total amount originally invoiced, plus total amount disallowed.

(3) For labor hours:

- A list of employees, their labor categories, and the numbers of hours worked for the reporting period.
- For the current reporting period, display the expended direct labor hours, and the total loaded direct labor costs.
- For the cumulative task order period display: the negotiated and expended direct labor hours and the total loaded direct labor costs.
- Display the estimated direct labor hours and costs to be expended during the next reporting period.
- Display the current dollar obligated to the task order, net amount invoiced, and remaining amounts for the following categories: Direct labor hours, total estimated cost, subcontracts by individual subcontractor, travel, program management, and Other Direct Costs (ODCs).

- Unbilled allowable costs (e.g. subcontractor hours). Display the total costs incurred but unbilled for the current reporting period and cumulative for the task order.
- For the cumulative period display: amount shown on each TDD; amount currently claimed; and remaining approved amount. The remaining approved amount is defined as: the TDD amount less total amounts originally incurred.
- Display the estimates of remaining direct labor hours and costs required to complete the task order.
- Provide a graph using a vertical axis for dollars and a horizontal axis for expenditures against the total estimated cost of the Task Order.
- A list of deliverables and/or activities performed for each task order during the reporting period.
- A status listing of all approved/unapproved/pending approval requests received by the contractor during that month with associated status disposition and all requests pending completion on current and any previous monthly report with projected completion date. The numbers of hours required to complete each request shall be provided and any deviations from projected completion date shall be quantified and described.

1.2. Financial Reporting and Cost Tracking:

In addition to standard Task Order reporting requirements, ORD requires a mechanism for providing costs and estimates at the TDD or project/work request level with the capability to track costs to the type of work performed as it relates to this Task Order. All costs associated with projects and/or work requests shall be reported in the monthly report by TDD as well as at an aggregate level, and as specified by the individual Task Order TDDs. All costs associated with specific project codes shall be reported in the monthly report, and as specified in the individual work request.

Project codes shall be established before technical work begins. Work estimates shall include costs associated with each major project milestone/phase.
All cost-tracking for work to be billed should include information to identify the following:
Task Order Number
TDD Number
Task number
Application name
Release number, if applicable
SLCM Phase / Integration matrix[1]
Work type (Bug fix, emergency release, etc.)
Special project code specified in the TDD or documented in the Work Request System (WRS).

- Create financial reports and track costs at a detailed level and produce standard reports as well as ad hoc reports;
- Changes in established project codes must be reviewed by the Requestor, and approved by the TOCOR.
- Costs shall be included in the monthly financial report due by the 15th of the month following the month reported.
- Additional financial reporting requirements will be specified in the individual work request/technical direction document.
- Reports shall be accurate, clear, complete, timely and in accordance with the requirements in the work request. Information in the monthly progress reports shall be consistent with costs identified in the associated monthly invoice and consistent with generally accepted accounting principles.

1.3. Task Order Management Plan

The contractor shall prepare a Task Order Management Plan within 15 business days of task order award describing the technical and functional (i.e. NOT site based) approach, organizational resources and management controls employed to meet the cost, performance and schedule requirements throughout Task Order execution. The contractor shall employ a program management structure to ensure the efficient execution of all tasks/TDDS, and the capability to report on the status of work performed. The contractor shall use a single point of contact (POC) for all matters regarding project administration and reporting. Work shall be reported in a format descriptive with an appropriate level of narrative and financial information for the TDD Technical Monitor (TM) and shall also be reformatted and rolled up to an appropriate level suitable for the TOCOR and AATOCOR.

1.4. Work request handling and tracking

The Contractor shall provide EPA customers with a centralized method of requesting project management support, including work status, at no cost to the government upon task order award. The appropriate TOCOR/TM shall have access to this system for the purposes of tracking status, approval, and cost. The phrase "work request system" refers to a standard solution. The WRS provides detailed work descriptions and routing approvals for requests associated with the applicable TO. The work requests will be routed to the appropriate TOCOR/TM for review, and approved requests will then be routed to the Contractor. The Contractor shall provide a written estimate of the number of hours necessary to complete the work. Work shall not start until approved by the TOCOR/TM. When ad hoc plans or reports are required, a request will be submitted via the WRS. The date of delivery for such items will be specified at time of the request. EPA standard operating procedures may require a technical work plan be submitted to the TOCOR/TM within a specified timeframe that contains specific deliverables and due dates for submission to the TOCOR/TM. When eighty-five percent (85%) of the ceiling hours have been expended on any Work Request issued with a ceiling of forty (40) hours or more, the TOCOR/TM as designated in the TDD shall be notified by the contractor in writing via the same

WRS. If additional hours are necessary, contractor shall provide TOCOR/TM with an estimate to complete the work request. If the request for additional hours exceeds 15% of the original estimate, the request should include a description of changes to the original estimate and why hours beyond the original estimate are needed to complete the work outlined in that estimate. The TOCOR/TM shall approve or disapprove the requests and/or additional hours as appropriate.

1.5. Operations and Maintenance Plan

The contractor shall provide Operations & Maintenance (O&M) Plan that describes resources, roles, responsibilities, policies, processes and general procedures to effectively manage this life cycle function across ORD within 30 business days of award. O&M procedures shall be defined in the O&M Plan and be refined and updated as changes or improved procedures are developed. The Operations & Maintenance Plan shall be kept current throughout the period of performance.

1.6. Operating and Maintenance Manuals

The contractor shall update current operating and maintenance manuals for the inventory of applications when requested. O&M plans exist for overall platform technologies (i.e. Lotus Notes, Oracle) and for significant investment applications (i.e. ESC, STICS) upon request, Separate from the O&M Plan, operating manuals and maintenance manuals shall describe detailed "how-to" procedures. For example, the O&M Plan might require that the system administrator ensure databases are backed up daily. An operation or maintenance manual describes how to do a backup.

1.7. Document Repository

The contractor shall maintain a central repository accessible to TOCORs/TMs of all user manuals, guides, deliverables, and all other relevant documentation within a to-be specified after award EPA space (ie share drive, Sharepoint site, confluence). These artifacts shall be created and updated accordingly and stored in a common repository. Changes to the contents of the repository shall be communicated to all relevant stakeholders.

1.8. Contractor Staff Report

The contractor shall provide a completed Contractor Staff Report weekly as described in the Special Clauses.

Acceptance Criteria for Deliverables:

During the review of deliverables, the TOCOR/TM shall have the right to reject or require correction of any deficiencies found in the deliverables. In the event of rejection of any deliverable, the contractor will be notified in writing by the TOCOR of the specific reasons why the deliverable is being rejected. The contractor shall have 10 calendar days to correct the rejected deliverable and return it to the TOCOR. The following acceptance criterion applies to all tasks:

Completeness, clarity, timeliness, organization, consistency, meets requirements, quality, grammatically correct, and technical accuracy.

APPLICATION SUPPORT:

2.1. Application Platform Management and Support

Application Platform Management and Support adheres to Agency standards and provides an ORD-enterprise server environment for ORD customers to deploy and host applications. Currently, ORD has a consolidated Windows server environment (development and production) as well as a Linux consolidated environment (development and production). The contractor shall maintain the application layer of these environments as well as the underlying databases. The current portfolio of application technologies present within ORD include, but is not limited to, those approved for inclusion in the Agency's Standards Profile document for Application Platform or those that have received an approved waiver.

The application and database platforms/programming languages/web servers currently within ORD or supporting an application in the ORD environment are:

- ColdFusion
- Jira
- Domino
- Oracle Internet Application Server
- Oracle Apex
- Oracle Database
- Bizflow
- Other BPM software like Activiti
- Microsoft Sharepoint O365
- Access
- Tableau
- Apache Tomcat
- Java
- JBOSS
- JRUN
- J2EE
- ASP.NET
- IIS
- Visual Studio
- EMC Documentum
- MySQL
- SQLserver
- Postgres
- Oracle Business Intelligence

- Drupal
- Web Access Management
- LDAP/Active Directory
- LAMP (Perl, Python, PHP)
- Open Source Semantic Web Software-like VIVO
- Ruby
- R
- C++
- HTML5
- ESRI

The contractor shall operate, manage and provide technical support on application platforms, and environments operated within ORD environment or ORD applications deployed to the NCC or the Cloud. Operations, management and technical support includes but is not limited to communications, assessments, deployments, upgrades, planning, testing, documentation, coordination, operations, monitoring, and maintenance. The contractor shall provide updates, status and reports on each of the items below to COR as requested.

The contractor shall perform the following activities for all application platforms within the ORD centralized environments in accordance with EPA policies, procedures, and standards:

- Install and configure new releases of the application platforms
- Operate and manage development, staging, and production servers for each application platform.
- Resolve problems and faults arising in the environments, to the extent possible within the contractor's ability (e.g., problems with the configuration settings of an environment under the control of the contractor, not with its underlying product coding not accessible to the contractor).
- Report to ORD every unplanned outage arising from within the environment, the underlying operating system or related software, communications facilities, adjunct facilities or services (e.g., identify management or security services), hardware, or any other source. An unplanned outage includes the failure of the platform or environment to respond normally to any user or service request due to any malfunction. Unplanned outage reports shall include a description of the nature and extent of the outage, the underlying causes, the ramifications and impacts, particularly upon customers, and the plan for correction of weaknesses exposed and avoidance of repetition. The report shall, if necessary, be iterative, always providing immediate notification to the community of the outage and as much information as is immediately available, followed as soon as possible with the rest of the information required.
- Communicate with ORD regarding the status of the environments, resolution of problems in the environments, and status of operational activities in the environments.

- Maintain configuration control of development, staging, and production environments, including configuration records, and report on the environments' configuration sufficiently to keep the COR informed.
- Maintain security of the environments in coordination with the task orders/contractors responsible for physical and operational security of the underlying servers and their operating systems and other software
- Monitor utilization and performance of the environments, perform diagnostics and tuning, and communicate status and trends to the COR when identified and provide advance notice of any foreseeable shortfalls in capacity.
- Recommend capacity changes, including specific hardware and software requirements, to meet projected requirements for capacity to maintain adequate levels of performance. To the extent directed by the COR when identified, perform acquisition, installation, and configuration of software components of additional capacity.
- Coordinate with other task orders, and, to the extent directed by the COR, with other contracts, in order to achieve the requirements of this task order. This includes, but is not limited to, areas such as data and storage management; (for the environments themselves and for customers' data managed in the environments); server provisioning and other hosting operations
- Provide day-to-day operational support including monitoring, data backup, maintenance, support, and upgrades of the application environments and COTS (commercial off the shelf) software supporting the different environments. This specifically includes the static web environments.
- Operational support (monitoring, administration, backup) for the web-hosting servers including the shared/dedicated application environments
- Improve the efficiency of, and minimize the resources required for ongoing operations and implement solutions to improve system integration and inter-operation across ORD systems.
- Provide customer support to application owners and developers, i.e., respond to inquiries regarding the operations status, assistance in connecting to and using the environments, resolution of problems with use of the environments, etc.

2.2. Software and Application Maintenance

Software and application maintenance includes testing and modification of a software system or component after delivery to correct faults, improve performance or other attributes; adapt to a changed environment or maintenance activities focused on anticipated problems, or preventive maintenance.

2.2.1. APPLICATION TESTING

During the Testing task, various components of the system shall be integrated in a testing environment and checked for issues and interoperability. Software testing may be required at different levels throughout the maintenance process. That is to say, the target

of the test can vary: a single module, a group of such modules (related by purpose, use, behavior, or structure) or a whole system.

Testing shall be conducted in view of specific objectives in precise, quantitative terms that allow control to be established over the test process. Test cases shall be designed to check that the functional specifications are correctly implemented and may be aimed at verifying different properties. However, several other non-functional properties may be tested as well, including performance, reliability, and usability, among many others.

Purpose/Use
- □ To ensure the system satisfies the user requirements
- □ To check for errors or bugs in the code, business rules, or intended processes
- □ To validate security requirements are met
- □ To validate individual system components integrate properly

Expected Benefits
- □ To identify most issues prior to release of the system to the user community
- □ To ensure user buy-in and acceptance
- □ Increased stakeholder confidence in system development processes
- □ Increased effectiveness of the system deployed to production

Anticipated Deliverables
- □ Project plans
- □ Validation deficiency reports
- □ Validation issues
- □ Procedure change requests
- □ Change requests for the verification methods, criteria, and environment
- □ Analysis reports (e.g., statistics on performances, causal analysis of non-conformances, comparison of the behavior between the real product and models, and trends)
- □ Trouble reports
- □ Test Plans
- □ Test Design Specifications
- □ Test Procedure Specifications
- □ Test Case Specifications
- □ Test Logs
- □ *As specified in TDD* or work request

2.2.2. SOFTWARE APPLICATION AND DATABASE IMPLEMENTATION

The Contractor shall use a formal deployment process that addresses infrastructure requirements and deploys the system to a production environment. For example, a new or upgraded COTS product might require additional memory, hardware, or configuration changes and this information must be communicated to all relevant stakeholders including other contracting firms early in the implementation process. Collaboration throughout and with all relevant stakeholders is a critical success factor.

Purpose/Use

- □ To identify and address hardware and other infrastructure requirements to support the application software
- □ To deploy new or modified code in a production environment
- □ To provide appropriate communications to users and other relevant stakeholders
- □ To address training requirements in conjunction with release

Expected Benefits

- □ To maximize the efficient use of the system
- □ To ensure that the right persons have access to the system

Anticipated Deliverables

- □ Project plans
- □ Training guides
- □ Manuals
- □ Code
- □ *As specified in TDD* or work request

2.2.3. SOFTWARE APPLICATION ADMINISTRATION & MANAGEMENT

The Software Applications Administration and Management function shall perform the processes required for the delivery of services and processing, storage, and data transfer capacity at the levels required by application owner's specifications.

The Contractor shall establish formal system administration procedures to manage the maintenance of production applications and systems software to ensure reliable and efficient use.

The Contractor shall implement standard, formal processes for ensuring the optimal operation of its systems and making information easier to access and use.

The Contractor shall employ application administration procedures to ensure that applications are available to authorized users and are configured properly. Application administration activities include setting up user accounts, configuring application settings, addressing simple application or data issues, and accessing system functions that require administrative levels of access.

Purpose/Use

- □ To ensure the application is configured appropriately
- □ Track requests for bug fixes, enhancements, or modifications to an existing system
- □ Assess and document the level of effort to address a request
- □ Organize and group requests into releases and/or patches.

Expected Benefits

- □ Reduced productivity losses that occur when the application is not appropriately configured, unstable, or performance is less than optimal.

Anticipated Deliverables
□ Project plans
□ Documented System Administration Procedures
□ *As specified in TDD* or work request

2.2.4. GENERAL DATABASE ADMINISTRATION

The contractor shall provide general database administration to manage data, maintain operations, secure, and ensure integrity of data. This includes, but is not limited to, database architecture design and implementation, data set normalization, troubleshooting data and structure issues, data recovery, building indexes, load balancing, backup and restore services, database and application tuning, and assisting with the infrastructure DBAs as needed as an expert. Ensure reliable reorganization, archive, and data backups are performed for all database/web application servers. Backup procedures shall include periodic Quality Assurance (QA) testing of data restore capabilities. Maintain data integrity and develop secure data backup process coordinating off-site data storage with Infrastructure Division/Contractor. Provide SQL scripts and/or Access reports/queries on national application data utilizing ODBC connections/or other applicable means.
Other requirements include:
□ Administer database and related operating system settings, such as security, compact/defragment frequency, and linkages to other databases
□ Create, run, and optimize queries to view or manipulate data
□ Copy or move databases or related database objects (e.g. tables, queries).

Data management may include:
□ Configuring data files for users
□ Managing disk/database/table storage, capacity, and transaction resources
□ Capacity planning
□ Back-up and archiving records / files
□ Report of the means for verifying data integrity.

Deliverables

□ Non-recurring report(s) concerning data base administration systems support activities and procedures. Reports will be requested via work request and date of delivery will be specified at time of request.
□ Non-recurring Configuration and Standard Operating Procedure (SOP) documentation. This will require the following:
- Configuration manuals for database instance configuration, and location of all files associated with each instance, file protection settings for all files, security configuration, location of scripts, parameter files, etc.
- Database software installation SOP;
- Database software upgrades SOP;
- Database instance installation, configuration, and maintenance SOP;

- SOP for populating test and pre-release instances with data from production instance;
- SOP for point-in-time recovery from database failure
- SOP describing how and where developers deliver new versions of software;
- SOP describing the database administrator process for installation and testing of a newly delivered application in test, pre-release and production instances.
- SOP describing the entire process from delivery of a new application version through testing and installation in production instance, including time line, milestones, roles and responsibilities.

□ Project plans
□ As specified in the Appendix, and/or specified in TDD or work request

2.2.5. RELEASE MANAGEMENT

ORD seeks to leverage the Contractor's standard release processes to ensure changes are performed in a manner that minimizes risk to its production environment.

A successful software project release is one that releases at the right time, does not negatively impact customers and users, delivers the business value it was designed to address, and does not cause an inordinate impact on user support teams. The Contractor shall follow their CMMI processes and procedures for release management and work collaboratively with all stakeholders, including other BPA contractors. It is anticipated that the bulk of software releases will be emergency or minor.

Functional and physical audits shall be performed before the release of the software to verify that all the necessary software configuration items are present, consistent and correct.

Deliverables
□ As specified in the Appendix, and/or specified in TDD or work request
□ Project plans
□ Release plans
□ Contingency plans
□ Release numbers

2.2.6. PROBLEM MANAGEMENT

The Contractor shall use a formal problem management approach including specific accountability to TOCOR management to identify and respond to both single and recurring problems associated with ORD software applications and data resources. This function shall focus on root-cause analysis as well as proactive solutions to issues of an escalating nature.

Deliverables
□ Project plans
□ Root cause analysis reports
□ Documented processes and standards

□ As specified in the Appendix, and/or specified in TDD or work request

2.3. **Software Sustainment and Improvement**

Software sustainment includes processes, procedures, people, material, and information required to support, maintain, improve and operate the software aspects of a system. It includes enhancements, data management, configuration management, training, and protection of critical program information, information technology security, supportability and interoperability functions, Commercial Off-the-Shelf (COTS) product management, and technology refresh or standard changes by the Agency.

2.3.1. Software/Application Enhancements

ORD has developed multiple applications supporting multiple administrative business processes including, Travel, Extramural, Clearance, Research Management, and correspondence management as well as other applications that support internal business processes. The contractor shall enhance and support these production applications.

The contractor shall:

- Monitor, maintain, enhance and manage all existing business applications and correct defects as they become known. The same software engineering best practices and techniques will be used for application modifications as are to be used for new system development. All data and programming standards shall be used and consistently applied.
- Utilize an iterative development methodology for all work done under this contract. The methodology shall allow users to examine the validity and accuracy of the business requirements and to respond to the usability and performance of new developments. User testing and acceptance throughout the development cycle will detect usability issues, missing requirements, and any necessary design changes early in the process, allowing them to be put in place immediately.
- Identify risks associated with the development of new software efforts, including extension systems, the analysis and classification of those risks as to severity and likelihood, and the identification of techniques to mitigate the risks.
- Conduct feasibility/cost-benefit studies, requirements analyses, and all other life cycle activities included in the design phase, including the use of an object-oriented technology such as the Unified Modeling
- Language (UML), development, implementation, and documentation, for the development and maintenance of systems for long-term use.
- Collect, develop, and analyze software requirements through the use of facilitated user sessions.
- Formulate a business model identifying the proposed (to-be) business processes necessary to improve the efficiency and effectiveness for each application, as necessary.

- Develop "use cases" and determine the prescribed set of "artifacts" for each phase of each development cycle.
- Enhance and modernize applications using a service-oriented architecture and web services, including RESTful & SOAP where applicable
- Develop applications in a multi-platform environment, using object oriented programming, with an understanding of Internet/Intranet architecture.
- Develop software applications prototypes for evaluation.
- Conduct usability analysis and assessments
- Adhere to 508 compliance regulations for all development efforts
- Design systems using the Rational Unified Process, or a framework similar to it.
- Assist with the development of business case documents by providing feasibility and high level business requirements analyses for existing systems or new requests and development cost estimates.

2.3.2. DATA MANAGEMENT SUPPORT

EPA's ability to share data among EPA offices and its partners is dependent upon quality data management services. As increasing amounts of data flow within and between organizations, the problems that can result from poor data management practices are becoming more apparent. A critical success factor for this task is to understand where data is stored and manage the potential conflicts that arise when copies of that data are out of sync with one another.

The services within the scope of *Data Management Support* may include:

□ Create, implement, and maintain ORD, EPA data assets following national, and international data standards
□ Design and preparation of data coding schemes and maintenance of code sets
□ Design of quality assurance methods; enforcement of data quality
□ Metadata and content management, data mining, and evaluation of new data management technologies
□ Integration of data across enterprise
□ Provide reliable access to data
□ Adhere to federal data open access guidelines

The Contractor shall follow a formal, standard data management process and functional approach to efficiently manage user access to application data. This function shall include the management of other structured and unstructured content at the data management layer.

Purpose/Use

□ To structure and organize data via use of a database management system
□ To create and manage data warehouses where information is gathered from various databases and compiled in a way that supports decision-making activities
□ To create and manage data mining systems that analyze data to show patterns or relationships
□ To identify inconsistencies and other deficiencies in data
□ To protect data and prevent data corruption

- To maintain database software infrastructure such as configurations, data replication routines, scripts, indexes, etc.
- To conduct queried data scrubbing activities to 'clean' data, such as eliminating duplicate records

Expected Benefits
- Integrity, security, reliability, and availability of application data
- Decreased costs associated with security breaches and corruption of data
- Increased ability to identify trends that may be helpful in the accomplishment of ORD objectives

Deliverables
- Project plans
- Reports
- As specified in the Appendix, and/or specified in TDD or work request

2.3.3. DATA SERVICES

EPA supports a variety of data requirements, from financial and administrative to vast quantities of GIS, modeling, and other scientific data. The scope of work for the data services principal competency covers all **non-science** aspects of data support services including:
- Data migration
- Data subscription services
- Data transfer
- Data warehouse
- Database optimization
- Search and search engine optimization, metadata, findability
- Data conversion
  - Verify procedures are in place and are being followed to review the completed data for completeness and accuracy and to perform data clean-up as required
  - Determine conversion error rates and whether the error rates are manageable
  - Make recommendations on making the conversion process more efficient and on maintaining the integrity of data during the conversion.
- Database design
  - Evaluate new and existing database designs to determine if they meet existing and proposed system requirements.
  - Recommend improvements to existing designs to improve data integrity and system performance.
  - Evaluate the design for maintainability, scalability, refresh-ability, concurrence, normalization (where appropriate) and any other factors affecting performance and data integrity.
  - Evaluate the TO process for administering databases, including backup, recovery, performance analysis and control of data item creation.

Deliverables
- Project plans

- □ Reports
- □ Checklists, procedure documents
- □ APIs
- □ Webservices
- □ Periodic archive creation and delivery of all project artifacts, materials, and deliverables
- □ As specified TDD or work request

2.3.4. CHANGE MANAGEMENT

ORD seeks to leverage a single, standard change management process for all applications covered under this TO that effectively classifies change requests into priority queues and enables ORD to understand the costs associated with major changes. In addition, this task order must inform and feed into a larger change management process across the infrastructure support division, the Agency, and its support contractors. This integrated approach will enable ORD to manage the process by which changes are requested, reviewed, approved, and processed and with an expected result of increased visibility into and accountability for change related activities. Some enterprise-applications supported under this task order, like ORD Purchase Card, may have their own change advisory boards that must be supported. The contractor will provide accurate, objective, and timely technical information to inform change requests.

Expected Benefits

- □ Increased effectiveness of change processing and implementation of requested changes
- □ Decreased costs associated with processing required changes
- □ Increased customer satisfaction through increased awareness of planned and unplanned events that impact resource availability

Deliverables

- □ Project plans
- □ Requirements documents
- □ Problem reports
- □ Change requests
- □ Change logs
- □ Change technical feasibility analysis documents
- □ Change costs and benefits
- □ Change impact analysis
- □ Change planning
- □ Test reports
- □ Documentation
- □ System release
- □ Change verification
- □ Deviation authorizations; waivers
- □ As specified in the Appendix, and/or specified in TDD

2.3.5. CONFIGURATION MANAGEMENT

Configuration management processes shall be used to manage the synchronization of any changes that may occur during the maintenance of the system.

Change control procedures shall facilitate input for periodic audits to confirm procedures are being followed and the functionality and physical characteristics of the system match those required by the approved configuration documentation.

Deliverables

- □ Project plans
- □ As specified in the Appendix, and/or specified in TDD or work request
- □ Accurate estimates of resources needed to perform the work
- □ Cost/benefits analysis of the requested change
- □ Process descriptions
- □ Requirements
- □ Designs
- □ Test plans and procedures artifacts
- □ Test results artifacts
- □ Interface descriptions
- □ Drawings
- □ Source code
- □ Configuration Documents
- □ Tools (e.g., compilers)

2.3.6. SECURITY MANAGEMENT

The security management function shall be responsible for managing the operational and planning aspects of information security. Responsibilities for this function shall be:

- □ To review security requirements and develop organizational plans to address requirements
- □ To monitor security and user access permissions
- □ To ensure users have appropriate application rights and permission
- □ To ensure data is protected
- □ To assess the impact of proposed activities or changes on security
- □ To define policies for data and technical resource security
- □ To assess and recommend revisions to processes or data center configurations to increase security
- □ To investigate and review security threats, vulnerabilities, or incidents

Expected Benefits

- □ Reduced productivity losses that occur when the application security is not appropriately configured;
- □ Increased security of data and other technical resources;
- □ Decreased risk of security breaches or lapses, and
- □ Sustained security standards.

2.3.7. DISASTER RECOVERY SUPPORT

The contractor shall provide technical support for Information Security and Disaster Recovery Planning in relation to the database applications. The Information Security Plan shall include physical and system security, roles, and triggers, etc. The Disaster Recovery Plan shall include designation of the Contractor's readiness team, identification of recovery priorities, development of emergency and recovery procedures, description of contingency site(s) and testing and maintenance of the plan. In addition, the contractor shall provide security management of the software which includes installing and maintaining Agency standard database security software. The contractor shall provide technical support for any security action/issue that affects the application-operating environment. The contractor shall apply security patches to the database and provide a monthly report of Security Activities for servers.

Deliverables
- □ As specified in the Appendix, and/or specified in TDD or work request
- □ Impact analysis
- □ Project plans
- □ Information security plans
- □ Disaster recovery plans
- □ Emergency and recovery procedures

2.4. END USER SUPPORT

The contractor shall assist in resolving technical issues of the applications within scope of the task order. The contractor shall provide support staff with the technical experience and expertise to diagnose and resolve issues in a complex, multi-application environment based on a three-tiered architecture. Currently OEI's EPA Call Center is the front line for all user requests. The contractor will coordinate effectively and efficiently with other support contractors to ensure work/tickets within scope of this task order are addressed. The contractor shall provide an approach to ensuring the Tier 1 call center has enough information to route tickets correctly.

The contractor shall provide staff with sufficient business knowledge in support of the applications to understand and provide assistance with any user issues of a non-technical nature. Typical support activities may include logging and tracking all forms of customer communications received (e.g. telephone, email, electronic, etc.) with follow-up contact to understand the problem (if appropriate), providing immediate resolution as appropriate, assigning incident to the appropriate party or parties, and tracking incidents to closure. The contractor shall implement the appropriate business processes and/or technologies to consistently manage this function in a timely and cost efficient manner. Business processes shall be implemented by the contractor that shall institutionalize common and standard operating procedures targeted at reducing end-user support calls and facilitate a self-service user culture. End user support shall not be considered a

template email confirmation or individual to answer the telephone. First call resolution is optimal.

Specific requirements for user support activities may include training users to operate the software and understand the products and services and providing direct assistance during daily operations.

The contractor shall develop system and user documentation for both existing and newly deployed application software as specified.

The contractor shall provide the following documentation for each application as required:

- System Documentation
- Training Documentation
- User Documentation
- Incident Management tool/service
- Data Models/Procedures, Test Cases, Models
- Source Code Baselines, Compile Time-Files, and Component executables.
- User Guides, Analysis and Design Package, and Maintenance and Deployment Package.
- Other documents deemed necessary.

All documentation shall be in a format editable by the Government and maintained in the appropriate provided tool.

Deliverables
□ As specified in the Appendix, and/or specified in TDD
□ Logs
□ Metrics
□ Resolution reports
□ Procedures
□ Documentation
□ Training plans
□ Training syllabi

If user training is required, the amount of training may depend upon the experience of the users and the complexity or novelty of the software.

2.5. SYSTEM TERMINATION SUPPORT

The contractor shall support and facilitate removal of existing systems or parts of a system from the production environment in accordance with Agency policy. With the Agency's move to the cloud and Microsoft O365, the need to retire many Lotus Notes applications will exist. In some cases, the need to migrate data from the legacy systems will exist. The contractor shall have experience migrating data from prior systems to

newly implemented systems especially from Lotus Notes Applications. The contractor shall propose methods for data archiving and retention when necessary. Additionally, the contractor shall provide and a consistent, enterprise approach for porting and/or retiring the Lotus Notes application information and systems.

Activities may include:
□ Deactivation of system with recovery capability
□ Packaging and archiving of current data (including software code, runbooks, compilers, tools, and other information)
□ Migration of data
□ Disposition of software components

Deliverables:
□ Project plan
□ Retirement Plan
□ Transition Plan
□ Archive of Data and Software

Optional Tasks:

Specifically, the scope of services required under the optional tasks if exercised will be specified further in the TDDS but will include:

- Project Management;
- Business application analysis;
- Application requirements definition;
- Application development;
- Application design
- Application integration
- Application documentation
- Application training support
- Application testing
- Quality assurance

2.6. Database Development

The contractors shall develop database applications that support ORD business requirements and operate within EPA's infrastructure specifications. Any database packages utilized to develop these diverse data sets shall comply with EPA standard software. The contractor shall develop normalized data sets, apply maintenance of data sets (for creation, change, or deletion of records), and provide the necessary interfaces to link these data sets into an Internet capable environment. The contractor may use "middleware" commercial packages to integrate data sets for the purposes of collecting data, integrating with web pages, or providing data set files or services. ORD shall identify the functional data, subsistence of any existing data sets and taxonomies, and

commercial data base software to be utilized. However, ORD may require the contractor to recommend the best solution within the framework of the EPA standards.

2.7. Application Development and Support

The contractor shall develop customized applications utilizing the various computer languages identified in ORD/EPA environments or other computer languages including COTS products (as necessary). ORD is actively moving towards mobile and cross-browser enablement of existing applications for Web 2.0. The contractor shall have experience with mobile application development and mobile security, utilizing industry standard protocols and practices. The contractor shall have proven experience developing software systems utilizing Unified Process (UP), Rapid Application Development (RAD) and Agile methodologies and use of issue tracking tools like Jira for development efforts and version control tools like GitHub. Knowledge and experience developing in open source technologies that are implemented enterprise-wide like alfresco, Activiti, VIVO, and others will be required. The contractor shall have experience in designing, architecting, developing and delivering Java Two Enterprise Edition (J2EE) applications; and knowledge of service oriented architecture (SOA).

ORD will outline the requirements for a custom application development in subsequent TDDs and exercising optional tasks. The contractor shall develop a work plan and a methodology for the development of requirement, propose a programming language(s) platform, and means to present draft and final presentations of application functionality to ORD for application approval and use. System security updates, test plans and results, database schema, data dictionary modifications, interface design document, and a functional design document are required with each release of new software and with any major modifications.